Amendment to the Claims:

The list of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Claims 1-9 (canceled).

Claim 10 (currently amended): A production method of a plastic optical fiber, comprising the step of, at least once, annealing a plastic optical fiber obtained by heat-drawing an undrawn fiber obtained by melt spinning, at a circumferential velocity ratio between the front and rear rollers (circumferential velocity of a rear roller / circumferential velocity of a front roller) of 0.5 to 1.2 under heating conditions which satisfy $4 \leq y \leq -1.5x + 330$ and $(Tgc - 5)°C \leq x \leq (Tgc + 110)°C$ wherein Tgc represents a glass transition temperature of a core, x represents an annealing temperature (°C), and y represents an annealing time (seconds).

Claim 11 (original): The production method as claimed in claim 10, wherein a homopolymer of methyl methacrylate, or a copolymer comprising a methyl methacrylate unit and another monomer unit is used as the core.

Claim 12 (previously presented): The production method as claimed in claim 10, wherein the core of the plastic optical fiber comprises a homopolymer of methyl methacrylate, the heat drawing is carried out such that the birefringence absolute value of the core becomes 3×10^{-4} or higher, and the annealing is carried out at a circumferential velocity ratio between the front and rear rollers (circumferential velocity of the rear roller / circumferential velocity of the front roller) of not higher than 1 under conditions which satisfy $x \leq (Tgc + 20)°C$, wherein Tgc represents the glass transition temperature of the core, and x represents an annealing temperature (°C).

Claim 13 (currently amended): The production method as claimed in claim 10[[, 11 or 12]], which has the step of carrying out annealing under the heating conditions twice or more.

Claim 14 (currently amended): A production method of a plastic optical fiber, comprising the step of fixed length annealing a plastic optical fiber obtained by the method as claimed in ~~any one of~~ claim[[s]] 10 ~~to 13~~ at a temperature not higher than ~~[(a glass transition temperature of a core) + 8]°C~~ (a glass transition temperature of a core + 8°)C.

Claim 15 (currently amended): A plastic optical fiber obtained by the method as claimed in any one of claims 10 to 14 and having a shrinkage stress occurring temperature obtained by thermomechanical analysis of not lower than [[[]] (a glass transition temperature of a core[[)]] - 35[[]]]]°C.

Claim 16 (original): The plastic optical fiber as claimed in claim 15, wherein the core comprises a homopolymer of methyl methacrylate and has a birefringence absolute value of not larger than 2.0×10^{-4}.

Claim 17 (currently amended): A plastic optical fiber obtained by the method as claimed in any one of claims 10 to 14, having a core which comprises a homopolymer of methyl methacrylate and has a birefringence absolute value of not smaller than 1.5×10^{-4}, and having a shrinkage stress occurring temperature obtained by thermomechanical analysis of not lower than [[[]](a glass transition temperature of the core[[)]] - 20[[]]]°C.

Claim 18 (currently amended): The plastic optical fiber as claimed in claim 15[[, 16 or 17]], which exhibits a shrinkage ratio of not higher than 2% when heated at 90°C for 65 hours.

Claim 19 (currently amended): A plastic optical fiber cable obtained by forming a coating layer around the plastic optical fiber as claimed in ~~any one of~~ claim[[s]] 15 ~~to 18~~.

Claim 20 (original): A plugged plastic optical fiber cable obtained by attaching a plug on the tip of the plastic optical fiber cable as claimed in claim 19.

Claim 21 (canceled).

Claim 22 (original): A production method of a plastic optical fiber, comprising the step of annealing a plastic optical fiber obtained by melt spinning, at a temperature from (a glass transition temperature of a core – 5)°C to (the glass transition temperature of the core + 80)°C while a tension of 0.35×10^6 to 1.5×10^6 Pa is applied to the fiber.

Claim 23 (original): The production method as claimed in claim 22, which has the step of heat-drawing a plastic optical fiber and carrying out the annealing after heat-drawing the plastic optical fiber.

Claim 24 (currently amended): The production method as claimed in claim [[21,]] 22 or 23, wherein a polymer containing a methyl methacrylate unit in an amount of not smaller than 70% by weight is used as the core of a plastic optical fiber.

Claim 25 (currently amended): The production method as claimed in claim 22 or 23, wherein a homopolymer of methyl methacrylate is used as the core of a plastic optical fiber and the annealing is carried out at a temperature not higher than (a glass transition temperature of the core + 30)°C such that the core has a birefringence absolute value of not smaller than 1.5×10^{-4} and the plastic optical fiber has a shrinkage stress occurring temperature obtained by thermomechanical analysis of not lower than [[[]] (the glass transition temperature of the core[[)]] - 20[[]]]°C.

Claim 26 (original): The production method as claimed in ~~any one of claims 21 to 25~~ claim 22 or 23, wherein the annealing is carried out by introducing a plastic optical fiber into an annealing zone substantially vertically to a horizontal plane.

Claim 27 (currently amended): The production method as claimed in ~~any one of claims 21 to 25~~ claim 22 or 23, wherein the annealing is carried out by use of a heating furnace disposed substantially horizontally with a plastic optical fiber to be annealed supported by a heating medium which provides buoyancy to the plastic optical fiber so as to cause the plastic optical fiber to travel within an annealing zone in a non-contact manner.

Claim 28 (currently amended): The production method as claimed ~~any one of claims 21 to 25~~ claim 22 or 23, wherein the annealing is carried out by alleviation treatment.

Claim 29 (currently amended): The production method as claimed in ~~any one of claims 21 to 25~~ claim 22 or 23, wherein the annealing is hot air annealing.

Claim 30 (currently amended): The production method as claimed ~~any one of claims 21 to 25~~ claim 22 or 23, wherein the annealing is carried out such that a produced plastic optical fiber exhibits a shrinkage ratio when heated at 90°C for 65 hours of not higher than 0.5%.

Claim 31 (currently amended): A production method of a plastic optical fiber cable, comprising the steps of obtaining a plastic optical fiber by the method as claimed in ~~any one of claims 21 to 25~~ claim 22 or 23, and then forming a coating layer around the obtained optical fiber.

Claim 32 (original): A production method of a plugged plastic optical fiber cable, comprising the steps of obtaining a plastic optical fiber cable by the method as claimed in claim 31, and then attaching a plug on the tip of the obtained optical fiber cable.

Claims 33 and 34 (canceled):

Claim 35 (new): The production method as claimed in claim 10, wherein the annealing step and the heat-drawing step are carried out continuously.

Claim 36 (new): The production method of a plastic optical fiber, comprising the step of fixed-length annealing a plastic optical fiber obtained by the method as claimed in claim 12 at a temperature not higher than (a glass transition temperature of a core + 8)°C.

Claim 37 (new): The plastic optical fiber as claimed in claim 17, which exhibits a shrinkage ratio of not higher than 2% when heated at 90°C for 65 hours.

Claim 38 (new): A plastic optical fiber cable obtained by forming a coating layer around the plastic optical fiber as claimed in claim 17.

Claim 39 (new): The production method as claimed in claim 10, wherein the annealing is carried out while a tension of 0.35×10^6 to 1.5×10^6 Pa is applied to the fiber.

Claim 40 (new): The production method as claimed in claim 39, wherein the annealing is carried out by introducing a plastic optical fiber into an annealing zone substantially vertically to a horizontal plane.

Claim 41 (new): The production method as claimed in claim 39, wherein the annealing is carried out by use of a heating furnace disposed substantially horizontally with a plastic optical fiber to be annealed supported by a heating medium which provides buoyancy to the plastic optical fiber so as to cause the platic optical fiber to travel within an annealing zone in a non-contact manner.

Claim 42 (new): The production method as claimed in claim 39, wherein the annealing is carried out by alleviation treatment.

Claim 43 (new): The production method as claimed in claim 39, wherein the annealing is hot air annealing.

Claim 44 (new): The production method as claimed in claim 39, wherein the annealing is carried out such that a produced plastic optical fiber exhibits a shrinkage ratio when heated at 90°C for 65 hours of not higher than 0.5%.

Claim 45 (new): A production method of a plastic optical fiber cable, comprising the steps of obtaining a plastic optical fiber by the method as claimed in claim 10, and then forming a coating layer around the obtained optical fiber.

Claim 46 (new): A production method of a plugged plastic optical fiber cable, comprising the steps of obtaining a plastic optical fiber cable by the method of claimed in claim 45, and then attaching a plug on the tip of the obtained optical fiber cable.